meister, and others on the natural impurities contained in these fibres would at least have been mentioned, but such is not the case. On p. 37 reference is made to the presence in raw cotton of resins which withstand the action of alkalies, but no mention is made of the source of the information nor does the author appear to have published any original communication on this subject.

Wool and silk are more adequately dealt with from the chemical point of view, though here we miss a very important property of the former, viz., its behaviour on steaming which Breinl has shown to account for "ending" in the dyeing of piece goods (by which is meant that one end of the piece comes out deeper in shade than the other). A fairly good account is also given of the artificial fibres.

The rest of the work (pp. 261–378) contains what can scarcely be called more than a rudimentary account of dyeing and printing, in which the chemistry of the products employed and of the processes plays a very subordinate part.

The figures in the work are generally good, but it appears strange that in a special work of this kind the author has not recognised the importance of giving the appearance of cross-sections of the fibres described. A very large proportion of the text is taken up by matter which is quite irrelevant to the subject. Thus, in the case of wool no fewer than five pages are taken up by a description of the spinning process, while five more are devoted to trade statistics. Altogether the work is disappointing. It must, however, be said in its favour that the author generally acknowledges the source of his information, which has been largely taken from other German works. His copious references to current literature will act as a good guide to students and others who make use of the book.

(2) Since the textile fibres constitute the raw materials for some of our most important industries, a well-planned and conscientiously compiled monograph on the subject, in which all the facts concerning them are systematised and lucidly discussed, should form a welcome addition to our technical literature. It has been the endeavour of the author, in writing the present volume, to carry out this ideal, and though he does not claim to have attained it, we have no hesitation in saying that he has produced a most useful monograph. The subject-matter is well arranged, and is brought up to date, chiefly in the copious footnotes which give epitomes of the more recent researches and patent specifications. The figures representing the textile fibres are mostly micrographs by the author, and although they are somewhat rough, they bring out the essential features more prominently than many of the photographic reproductions that have been published. The figure on p. 230 seems to be out of place.

The last, and not the least, useful part of the work (pp. 461–592) gives an account of the various methods available for the analysis of textile materials. In his classification of the fibres (especially bast fibres) and the enumeration of the numerous species of the genus Gossypium (cotton), the author is rather too profuse. No mention appears to be made of the important effect of drying mercerised cotton in decreasing its affinity for dyestuffs. While admitting in the footnote on p. 283 that cotton begins to decompose above 120° C., the author seems to place the temperature at which decomposition begins at 160° C. (p. 282), but both are too high. No mention is made of that excellent reagent paranitroaniline for lignocellulose. The chlorination of wool, which is now a most important large-scale operation in connection with the production of unshrinkable fabrics, might with advantage have been more fully gone into. In spite of these shortcomings, the work must be regarded as one of considerable merit. That it has supplied a want is shown by the fact that within a comparatively short period it has gone through two editions.

OUR BOOKSHELF.

Pflanzenphysiologie. Versuche und Beobachtungen an höheren und niederen Pflanzen einschliesslich Bakteriologie und Hydrobiologie mit Planktonkunde. By R. Kolkwitz. Pp. v + 258 + xii plates. (Jena: Gustav Fischer, 1914.) Price 9 marks.

Prof. Kolkwitz tells us that his book has grown out of courses of practical instruction in plant physiology for university and agricultural classes. It is a little difficult to see exactly for whom it is designed—students would probably find it a difficult book to use, still the teacher of ordinary plant physiology will discover many hints that he can utilise with advantage.

A number of experiments are described, illustrative of the physiology of the higher plants, but the greater part of the volume is devoted to the lower forms of life. This later portion is an odd mixture of systematic description of illustrative species, but the accounts given are often so meagre as to be practically worthless. Directions are given for the culture of some forms, and the distribution of certain plankton species is briefly discussed. Incidentally, the chief sources of information are usefully given, but the whole volume suggests that it is a reproduction of the private notes of a teacher who has explored a fairly wide field himself, and wants the notes to refresh his

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recollection while conducting a course for students. But it is perhaps not often that short notes of this kind are of very much service to anyone except the man who put them together.

Lessons in Elementary Tropical Hygiene. By Henry Strachan. Pp. xi + 116 + vi plates. (London: Constable and Co., Ltd., 1913.) Price 1*s*. net.

We heartily recommend this little book. It is, of course, quite simple and very elementary; that is what it was intended for. Still, London school-teachers will find many useful hints in it. But it is written chiefly for the help of school-teachers in the tropics, both in Africa and in the West Indies. The author has been Principal Medical Officer of Lagos and of Southern Nigeria, and for two years he was acting as Colonial Secretary in Lagos. If he does not know the feel of the white man's burden, who does? And he knows well that the way to put things right in this world is to get at the children. It is they who will hold the ground which our men of science have won in the tropics. The victories of protective medicine and of sanitary administration over tropical diseases in Africa are, to us older people, still new, still wonderful; to the children, before many years are past, they will be old stories retold, facts taken for granted.

Anaesthetics: their Uses and Administration. By Dr. D. W. Buxton. Fifth edition. Pp. xiv + 477. (London: H. K. Lewis, 1914.) Price 10*s*. 6*d*. net.

The advances in the knowledge of anæsthesia and analgesia made it necessary for Dr. Buxton to rewrite most of the sections in the previous edition of his useful work, to delete obsolete apparatus and theories, and to add much new matter. Among other new features are the procedures involved in giving nitrous oxide and oxygen in major surgery; of ether by the open method, by intra-vascular infusion, by intra-tracheal and pharyngeal insufflation, and by colonic absorption; the methods of local regional and spinal analgesia, and the employment of alkaloids in analgesia and anæsthesia.

Defensive Ferments of the Animal Organism. By Emil Abderhalden. Third enlarged edition. English translation by Dr. J. O. Gavronsky and W. F. Lanchester. Pp. xx + 242. (London: John Bale, Sons and Danielsson, Ltd., 1914.) Price 7*s*. 6*d*. net.

The first German edition of this work by the director of the Physiological Institute of the University at Halle a/S. was reviewed in the issue of Nature for September 19, 1912 (vol. xc., p. 66). That two further editions were published in Germany in the following year is good evidence of the increasing interest being shown in Abderhalden's methods. The English edition will serve to bring these researches within the range of English students to whom the German text has been inaccessible.

LETTERS TO THE EDITOR.

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of Nature. *No notice is taken of anonymous communications.]*

Cellular Structure of Emulsions.

On Prof. Kerr Grant's letter (p. 162) see for previous observations of this striking phenomenon Prof. James Thomson, Proc. Glasgow Phil. Soc., February 15, 1882, reprinted in his collected Papers (p. 136); also by reference given in a footnote to the reprint, to more detailed and independent investigations by Prof. Bénard, of Bordeaux, in *Annales de Chimie,* 1901, and more recent papers, including a recent lecture to the Société de Physique, and to their discussion in connection with the solar phenomena referred to by Prof. Grant, by H. Deslandres, in the Annals of the Observatory of Meudon (vol. iv., 1910).

Joseph Larmor.

The cellular arrangement of convection currents in emulsions, described by Prof. Kerr Grant in Nature of April 16, was first recorded by E. H. Weber in 1855, with gamboge suspended in a mixture of alcohol and water. It is discussed in O. Lehmann's "Molekularphysik." The structure is most conveniently seen in molten wax or spermaceti, and in this form was discovered by H. Bénard. Many papers by Bénard, Dauzère, and others have appeared on the subject in the *Comptes rendus* and *Journal de Physique* since 1901, and the possible bearing of the phenomenon on geological and astronomical problems has been discussed. A paper by James Thomson on cellular structure due to convection, originally published in 1882, is included in his collected works. In this case soapy water was the liquid used. An account of the phenomenon, with references, is given in the present writer's report to the Beilby Prize Committee, read at the March meeting of the Institute of Metals.

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The Origin of the Moon and the Earth's Contraction.

In my letter to Nature of February 26, I said that, with the earth's radius and gravity at their present values, and with the speed of rotation assumed to be one revolution in five hours, gravitation would exceed the centrifugal force until a distance from the surface was reached of more than double the earth's radius. Dr. Ball upon this writes that I "concluded" that when the moon was detached from the earth, "the earth's radius must have been about three times its present one." I did not mean to imply this.

The whole subject of the moon's origin is highly speculative, as Sir G. H. Darwin himself admitted. There are two causes that might be invoked to account for the separation of her mass from the earth, viz., centrifugal force, and the sun's tidal action. These require different speeds of rotation. In Pratt's "Figure of the Earth,' 4th ed., art. 102, he shows that with a homogeneous earth the time of rotation which would render the centrifugal force equal to gravity would be one revolution in two hours and twenty-four minutes. I think that if the central parts were the more dense the speed would be rather greater. It seems impossible that a solid crust could have formed at this early period, when the spheroid could only just hold together. The eccentricity would then have been about 0·22.

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